

WHAT IS CLAIMED IS:

1. A configurable telecommunications system, comprising:  
an interface device having a plurality of telephony resources and operable to identify a protocol module required to process signals received by a selected one of the resources, to request the protocol module required to process the signals from a system controller, to receive the requested protocol module from the system controller, and to store the requested protocol module in a local protocol database; and  
the system controller operable to maintain a system protocol database storing a plurality of protocol modules, receive the request from the interface device, and communicate the requested protocol module from the system protocol database to the interface device.
2. The system of Claim 1, wherein the local protocol database stores integrated services digital network (ISDN) protocol modules.
3. The system of Claim 1, wherein the local protocol database stores a protocol module for each of the telephony resources.
4. The system of Claim 1, wherein the protocol module comprises a state table indicating an action based upon a current state and a signal type.
5. The system of Claim 1, wherein the interface device maintains resource information indicating a required protocol module for each of the telephony resources and a current state for each of the telephony resources.
6. The system of Claim 1, wherein the interface device is further operable to process signals received using a core signal handler in combination with a selected protocol module from the local protocol database.

A configurable telecommunications device, comprising:  
an interface having a plurality of telephony resources;  
a memory storing a protocol database having a plurality of protocol modules;

and

5 a central processing unit (CPU) operable to:

identify a protocol module required by a selected one of the resources  
to process telephony signals;

determine whether the protocol module is stored in the protocol  
database;

10 request the protocol module from a remote device if the protocol  
module is not stored in the protocol database;

receive the requested protocol module from the remote device; and  
store the requested protocol module in the protocol database.

15 8. The telecommunications device of Claim 7, wherein the protocol  
modules comprise integrated services digital network (ISDN) communications  
protocols.

20 9. The telecommunications device of Claim 7, wherein each protocol  
module in the protocol database comprises a state table indicating responses to signals  
based on a signal type and a current state.

25 10. The telecommunications device of Claim 7, wherein:  
the memory further stores a core signal handler performing functions common  
for all signals received from the resources; and

each protocol module in the protocol database operates with the core signal  
handler to process a specific signaling protocol.

30 11. The telecommunications device of Claim 7, wherein the memory  
further stores resource information indicating a protocol module required to process  
signals for each of the resources and a current state for each of the resources.

12. The telecommunications device of Claim 7, wherein the controller is further operable to remove an unused protocol module from the protocol database, wherein the unused protocol module is not required by any of the resources.

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13. The telecommunications device of Claim 7, wherein the controller is further operable to:

process signals associated with a communication session using a first version of a specific protocol module stored in the protocol database;

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receive an updated version of the specific protocol module during the communication session;

store the updated version of the specific protocol in the protocol database;

complete processing of the communication session using the first version of the specific protocol module; and

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remove the first version of the specific protocol module after processing of the communication session is complete.

14. A method for configuring a telecommunications device, comprising:  
identifying a protocol module required to process signals for a telephony  
resource of the device;  
determining whether the protocol module is stored in a local protocol  
5 database;  
requesting the protocol module from a remote protocol database if the protocol  
module is not stored in the local protocol database;  
receiving the protocol module; and  
storing the requested protocol module in the local protocol database.

10 15. The method of Claim 14, wherein the protocol module comprises a  
state table indicating responses to integrated services digital network (ISDN) signals.

15 16. The method of Claim 14, wherein the protocol module comprises a  
state table indicating responses to signals based on a signal type and a current state of  
the resource.

20 17. The method of Claim 14, wherein the local protocol database stores a  
plurality of protocol modules corresponding to a plurality of telephony resources of  
the device.

25 18. The method of Claim 14, further comprising processing signals  
received by the resource using a core signal handler to access the required protocol  
based on signal type of a signal received by the resource and a current state of the  
resource.

19. The method of Claim 14, wherein the remote protocol database stores a  
plurality of protocol modules that may be requested by the telecommunications  
device.

20. A communications device for supporting communications using a plurality of integrated services digital network (ISDN) protocols, comprising:  
an ISDN interface having a plurality of resources receiving ISDN signals;  
a memory storing a local protocol database and resource information  
describing the resources, wherein the local protocol database comprises a plurality of  
protocol modules; and  
a core signal handler operable to:  
receive a signal from a selected one of the resources;  
access the resource information describing the selected one of the  
resources;  
determine a protocol module required to process the signal based on  
the accessed resource information; and  
process the received signal using the required protocol module.

15 21. The communications device of Claim 20, wherein resource  
information indicates a selected one of the protocol modules required to process ISDN  
signals for each of the resources.

20 22. The communications device of Claim 20, wherein the protocol  
modules comprise state tables indicating responses to signals based on a signal type  
and a current state of a resource.

25 23. The communications device of Claim 20, wherein the core signal  
handler is further operable to:

determine a signal type of the signal;  
determine a current state of the selected one of the resources; and  
access the required protocol module to determine an action based on the signal  
type and the current state.

24. The communications device of Claim 20, wherein the core signal handler is further operable to:

determine that the required protocol module is not stored in the local protocol database;

- 5 request the required protocol module from a remote protocol database;  
receive the required protocol module from the remote protocol database; and  
store the required protocol module in the local protocol database.

25. A method for processing a telephony signal, comprising:  
receiving the signal from a telephony resource;  
determining a signal type for the signal using a core signal handler;  
accessing resource information associated with the resource to determine  
5 current state of the resource;  
selecting one of a plurality of protocol modules for processing the signal; and  
processing the signal using the selected protocol module based on the signal  
type and the current state.
10. 26. The method of Claim 20, wherein the signal comprises an integrated  
services digital network (ISDN) signal.
15. 27. The method of Claim 20, wherein the core signal handler comprises  
software providing signal handling functions common for all types of ISDN signaling  
protocols.
20. 28. The method of Claim 20, wherein the signal type indicates an action  
requested by the signal.
25. 29. The method of Claim 20, wherein the signal type indicates a selected  
one of alerting, call proceeding, connect, connect acknowledge, setup, setup  
acknowledge, suspend, suspend acknowledge, suspend reject, resume, resume  
acknowledge, resume reject, disconnect, release, release complete, status inquiry, and  
status.
30. 30. The method of Claim 20, wherein the resource information indicates a  
required protocol module and a current state for each of a plurality of resources.
30. 31. The method of Claim 20, wherein the protocol module comprises a  
state table indicating a plurality of actions indexed by signal types and resource states.

32. The method of Claim 31, wherein processing the signal comprises:  
accessing the state table to determine an action based on the signal type and  
the current state;  
performing the action; and  
5 updating the current state of the resource.

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33. Software for processing a telephony signal, the software embodied in a computer readable medium and operable to:

receive the signal from a telephony resource;

determine a signal type for the signal using a core signal handler;

5 access resource information associated with the resource to determine current state of the resource;

select one of a plurality of protocol modules for processing the signal; and

10 process the signal using the selected protocol module based on the signal type and the current state.

10 34. The software of Claim 33, wherein the signal comprises an integrated services digital network (ISDN) signal.

15 35. The software of Claim 33, wherein the core signal handler comprises software providing signal handling functions common for all types of ISDN signaling protocols.

20 36. The software of Claim 33, wherein the signal type indicates an action requested by the signal.

25 37. The software of Claim 33, wherein the signal type indicates a selected one of alerting, call proceeding, connect, connect acknowledge, setup, setup acknowledge, suspend, suspend acknowledge, suspend reject, resume, resume acknowledge, resume reject, disconnect, release, release complete, status enquiry, and status.

38. The software of Claim 33, wherein the resource information indicates a required protocol module and a current state for each of a plurality of resources.

30 39. The software of Claim 33, wherein the protocol module comprises a state table indicating a plurality of actions indexed by signal types and resource states.

40. The software of Claim 39, wherein processing the signal comprises:  
accessing the state table to determine an action based on the signal type and  
the current state;  
5 performing the action; and  
updating the current state of the resource.

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41. Software for configuring a telecommunications device, the software embodied in a computer readable medium and operable to:

identify a protocol module required to process signals for a telephony resource of the device;

5 determine whether the protocol module is stored in a local protocol database;

request the protocol module from a remote protocol database if the protocol module is not stored in the local protocol database;

receive the protocol module; and

store the requested protocol module in the local protocol database.

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42. The software of Claim 41, wherein the protocol module comprises a state table indicating responses to integrated services digital network (ISDN) signals.

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43. The software of Claim 41, wherein the protocol module comprises a state table indicating responses to signals based on a signal type and a current state of the resource.

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44. The software of Claim 41, wherein the local protocol database stores a plurality of protocol modules corresponding to a plurality of telephony resources of the device.

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45. The software of Claim 41, further operable to process signals received by the resource using a core signal handler to access the required protocol based on signal type of a signal received by the resource and a current state of the resource.

46. The software of Claim 41, wherein the remote protocol database stores a plurality of protocol modules that may be requested by the telecommunications device.

47. A communications device for supporting communications using a plurality of integrated services digital network (ISDN) protocols, comprising:

means for identifying a protocol module required to process signals for a telephony resource of the device;

5 means for determining whether the protocol module is stored in a local protocol database;

means for requesting the protocol module from a remote protocol database if the protocol module is not stored in the local protocol database;

10 means for receiving the protocol module; and

means for storing the requested protocol module in the local protocol database.

48. The communications device of Claim 47, wherein the protocol module comprises a state table indicating responses to integrated services digital network (ISDN) signals.

15 49. The communications device of Claim 47, wherein the protocol module comprises a state table indicating responses to signals based on a signal type and a current state of the resource.

20 50. The communications device of Claim 47, wherein the local protocol database stores a plurality of protocol modules corresponding to a plurality of telephony resources of the device.

25 51. The communications device of Claim 47, wherein the remote protocol database stores a plurality of protocol modules that may be requested by the communications device.

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